

REMARKS

Claims 1-33 are all the claims pending in the application. Claims 1-14 are allowed. Claims 19, 22, 26 and 32 stand objected to only as being dependent upon a rejected base claim, and would be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims. Therefore, claims 19, 22, 26 and 32 have been rewritten in independent form. Claims 15-18, 20-21, 23-25, 27-31 and 33 stand rejected on prior art grounds.

I. The Prior Art Rejections

Claims 15-18, 20-21, 23-25, 27-31 and 33 stand rejected under 35 U.S.C. §102(b) as being anticipated by Norman (6,292,868). Applicants respectfully traverse this rejection because Norman does not teach or suggest "forming a circuit between an output of said shift register and an input of said shift register by connecting a wiring loop between said output of said shift register and said input of said shift register" as defined by independent claims 15, 21, and 28.

More specifically, the invention provides a circuit that can observe data within shift registers without altering the data. The circuit includes selectors connected to the inputs and outputs of the shift registers. The selectors selectively connect the input with the output of a selected shift register to form a wiring loop for the selected shift register. A control device connected to the wiring loop uses the wiring loop to cause the data to be continually transferred from the output of the selected shift register to the input of the selected shift register and back

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through the selected shift register in a circular manner. The control device includes a data output accessible from outside the circuit. An observation wire is connected to the wiring loop, and the data passes from the wiring loop to the control device through the observation wire. The control device outputs data appearing on the wiring loop as the data is circulated through the selected shift register to permit data within the selected shift register to be observed outside the circuit without altering the data within the selected shift register.

As shown in Applicants' Figure 1, the invention provides a circuit that can observe data within shift registers without altering the data. The circuit includes selectors (e.g., multiplexors) 106, 107 connected to the inputs 121 and outputs 122 of the shift registers 112-114. The selectors 106, 107 selectively connect the input with the output 122 of one of the shift registers 112-114 to form a wiring loop 105 for the selected shift register.

The invention uses the foregoing circuit to provide a method for observing data within a shift register without altering the data. The method selects a shift register from many shift registers and then continually transfers data from the output of the shift register to the input of the shift register and back through the shift register in a circular manner. The method outputs data as the data is transferred from the output of the shift register to the input of the shift register to permit data within the shift register to be observed outside the circuit without altering the data within the shift register. This allows the invention to send data to a location external to the shift register to allow the shift register to be examined by an external device.

Therefore, with the invention, after the data is circularly transferred through the wiring loop 105, it returns to its original position within each of the shift registers 112-114. Therefore,

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with the invention, the data within the shift registers 112-114 is left essentially undisturbed even after it has been fully observed. As described in an alternative embodiment discussed below, the invention can alter one or more of the bits of data within the shift registers 112-114 (as desired) as the data is being circularly transferred through the wiring loop 105.

An observation wire 118 is connected to the wiring loop 105, and the data passes from the wiring loop 105 to the control device 100 through the observation wire 118. The control device 100 outputs data appearing on the wiring loop 105 through the observation input/output port 103 as the data is circulated through the selected shift register and wiring loop 105 to permit data within the selected shift register to be observed outside the circuit without altering the data within the selected shift register.

To the contrary, Norman discloses in Figure 3, a control engine 130 that is capable of monitoring the contents of shift register 118 and shifting the contents of register 118 by sequencer control to enable evaluation of any selected packet of encoded data (e.g., to enable the output from register 118 of a polarity bit, or other encoding tag bit, for any selected packet of encoded data). Shift register 118 is circular in nature so as not to lose its contents after a shift.

Thus, Norman does not teach or suggest "forming a circuit between an output of said shift register and an input of said shift register by connecting a wiring loop between said output of said shift register and said input of said shift register" as defined by independent claims 15, 21, and 28. Therefore, independent claims 15, 21, and 28 are not anticipated by Norman. Similarly, Norman does not anticipate dependent claims 16-18, 23-25, 29-31 or 33. In view of the foregoing, the Examiner is requested to reconsider and withdraw this rejection.

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II. Formal Matters and Conclusion

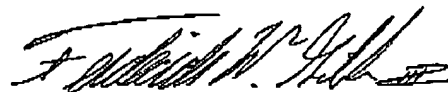
In view of the foregoing, Applicants submit that claims 1-33, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

Please charge any deficiencies and credit any overpayments to Attorney's Deposit
Account Number 09-0456.

Respectfully submitted,

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